

# Angioplasty

## A guide for people living with heart disease

Read this guide to learn:

- what angioplasty is
- the benefits and risks of angioplasty
- what will happen during the procedure
- what you can expect after the procedure



## What is angioplasty?

Angioplasty is a procedure that opens up the narrow or blocked arteries in your heart. It is a treatment that can work well for people who have this problem.

Angioplasty is done in a hospital, but it is not surgery. You will not have any incisions (cuts) in your chest or heart.

Angioplasty is a treatment, but not a cure for coronary disease. Coronary disease needs lifelong management. Other ways to control your disease is by:

- taking medicines prescribed by your doctor to help if you have:
  - high blood pressure
  - high cholesterol (a fat in your blood)
  - high blood sugar
- leading a healthy lifestyle

Your doctor can perform an angioplasty using different methods. Your doctor will first give you an **angiogram**, which is a heart x-ray. Then he or she will talk to you about whether angioplasty is a treatment for you.

Technical names for angioplasty are **PTCA** or **PCI**. These letters stand for:

PTCA:

- **P**ercutaneous - through the skin
- **T**ransluminal - inside the blood vessel
- **C**oronary - having to do with the heart
- **A**ngioplasty - opening the artery

PCI:

- **P**ercutaneous - through the skin
- **C**oronary - having to do with the heart
- **I**ntervention - the type of procedure used to open a narrowed artery

## **What are the benefits of angioplasty?**

**Over 90% of angioplasties are successful.** This means that out of 10 people who get this procedure, 9 do very well. Blood flow through the artery returns to normal or near normal. Most people get complete relief from angina.

People with severe coronary artery disease may still have symptoms, but they feel much better. This allows people to be more active and comfortable.

### **People recover much quicker from angioplasty than from heart surgery.**

During angioplasty, there is no incision (cut) or general anesthesia (being put to sleep). Most people are up walking on the same day. Most people go home the next morning. Some may be discharged the same day.

### **People can usually do their normal activities within a few weeks after angioplasty.**

## **How will I know if angioplasty is a treatment for me?**

Your angiogram will show the blockages in your coronary arteries. Your doctor will explain the different treatments you might have. These treatments include:

- managing your symptoms with medicines
- angioplasty
- bypass surgery

The treatment that is best for you depends on:

- how bad your coronary disease and symptoms are
- any other medical conditions that you may have
- your lifestyle
- what treatments you would prefer to have

You and your doctor will talk about whether angioplasty is a treatment option for you.

## When is angioplasty not a good treatment option?

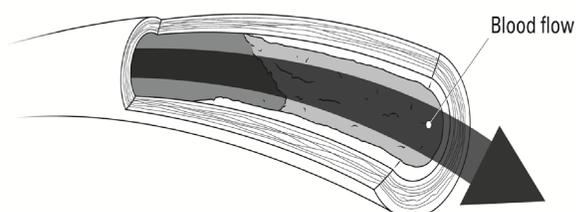
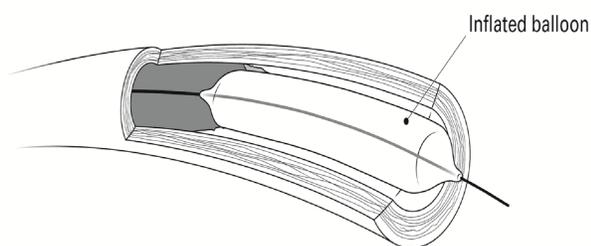
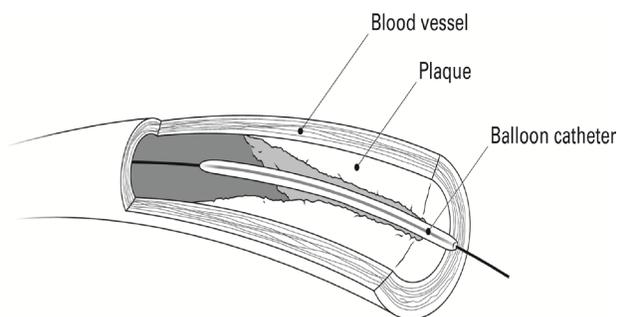
Angioplasty is not a good treatment option if:

- there are many narrow parts in many arteries
- if arteries are calcified ( have a lot of calcium build up) or hardened
- the balloon cannot get through a very tight blockage
- the catheter cannot reach a blockage because of a tight corner

## What happens during an angioplasty?

Angioplasty is done in a catheterization laboratory, also called a **cath lab**. A cath lab is a room in the hospital that has a heart x-ray and other equipment. This equipment helps doctors perform an angioplasty.

Your doctor will insert a catheter (small tube) into your body. To do this, they use an introducer sheath (a slightly larger tube).

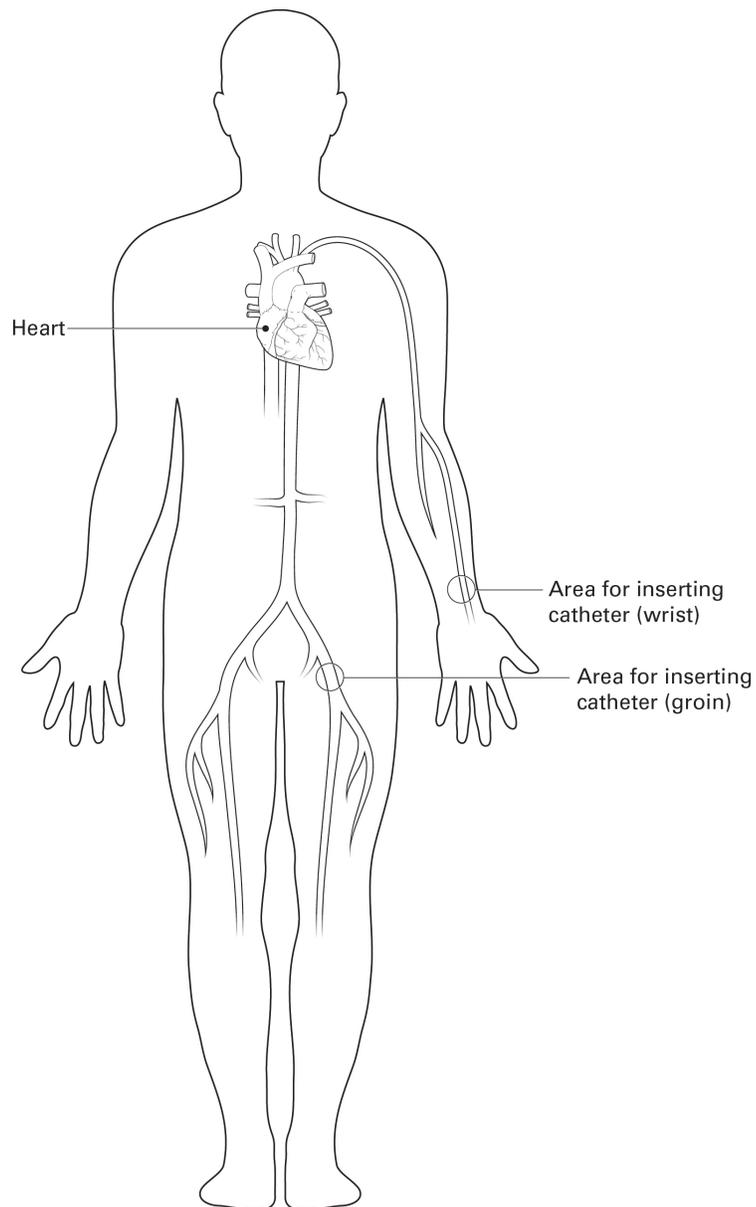


- The catheter is inserted in either your groin or your wrist. The catheter has a small balloon on the tip.
- The catheter is moved through one artery into the narrowed heart artery.
- The balloon on the catheter is then inflated. This opens the artery so that more blood can flow to the heart.
- The balloon is then deflated and removed from the artery.

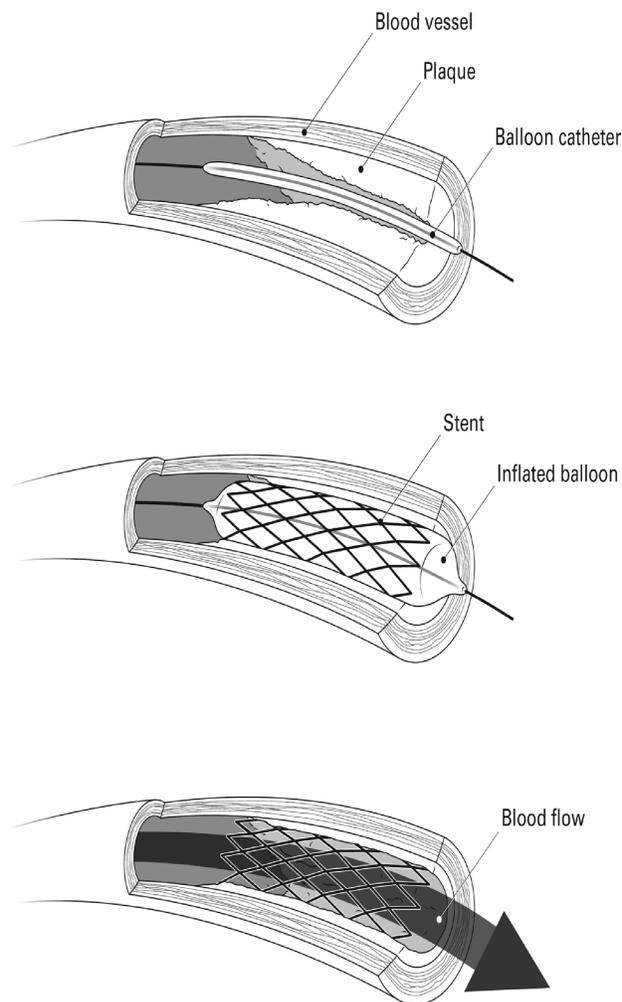
The plaque (fatty layers that cause the narrowing) is not removed from the artery.

It is pushed against the wall of the artery. This allows more blood and oxygen to flow through the artery to the heart.

### Places where the catheter might enter your body



## Angioplasty using a stent



The doctor usually puts a **stent** into the inside of the artery during an angioplasty. A stent is a small tube made of stainless steel mesh. It holds the artery open after angioplasty.

When a stent is used, your doctor will place it over a balloon. When the balloon is inflated the stent expands. It is pressed into the wall of the artery. The balloon is then deflated and removed.

After the stent is put in, the inner lining of the artery will grow over it. This usually takes about 2 weeks. This keeps the stent securely in place. The stent is kept in permanently to keep the artery open. Stents lower the risk of this area narrowing again.

## Will my arteries get narrow again?

Yes, an artery may become narrow again after angioplasty. This is called restenosis. If the artery narrows enough, you may feel angina again. Stents may help reduce restenosis. If 20 people get a stent, it would work for about 5 people.

Restenosis can happen as the wall of your artery heals after angioplasty. A new layer of tissue grows over the site of the angioplasty. This is the normal healing process. In most cases this normal healing process slows down and stops within a few weeks.

Restenosis happens if the new lining does not stop growing. This can narrow your artery. Most cases of restenosis happen in the first 3 to 6 months after angioplasty.

Restenosis is usually easily treated with a second angioplasty.

## **What are the risks during an angioplasty?**

Angioplasty is a common procedure. However, like any procedure done in the body, there are some risks. Common risks include:

- bleeding
- artery collapse
- heart attack
- stroke

In rare cases, an artery collapses or is damaged by the guide wire or balloon. This may happen to 1 or 2 people out of 100 people who get an angioplasty. A stent can often fix this, but sometimes patients need emergency bypass surgery. At University Health Network, our operating rooms are close by if a patient needs surgery.

**Ask your doctor about the risks and benefits of angioplasty for you.**

## **How do I prepare for angioplasty?**

First, you will have an appointment at the Pre-Admission Clinic. This appointment will happen about 1 to 2 weeks before your angioplasty. During this appointment, you will meet with your health care team.

The members of your health care team that will come see you are:

- your angioplasty fellow (cardiologist training for angioplasty)
- your nurse from the unit where you will be cared for
- your cardiologist

## **During this appointment:**

- Your nurse and angioplasty fellow will examine you. They will ask questions about your health. It is important that you tell them about:
  - the medicines you are taking
  - your medical condition
  - any allergies you have
- You will have blood tests and an electrocardiogram.
- Your nurse will show you a video about angioplasty. Your nurse will talk to about the before and after care for angioplasty.
- You will learn how to prepare for it.  
You will need to:
  - Not to eat or drink after midnight the night before your angioplasty.
  - Take some medicines before the procedure.
- Your cardiologist will talk you about the angioplasty procedure.  
You will learn about:
  - The benefits of angioplasty
  - The risks of angioplasty
  - Medicines you need before the angioplasty and how to take them.

Your cardiologist may prescribe the medicines clopidogrel (Plavix®) or prasugrel (Effient®). He or she will prescribe one of them if they think you will need a stent. This medicine stops blood clots from forming in your arteries and inside the stent. The cardiologist will order this medicine for a few days before the angioplasty.

Your cardiologist will also ask you to sign a consent form for the procedure.

## **What will happen before the procedure?**

When you arrive at the hospital, you will be admitted to an inpatient unit.

Here, a nurse will:

- help you change into a hospital gown
- help you to shave your groin, wrist, or both
- place an intravenous (IV) in a vein in your arm

The IV helps the doctors and nurses give you fluids and medicines, for example, blood thinners and pain medicine. The IV helps them give you fluids and medicine before, during and after the angioplasty.

When they are ready, you will be moved to the Cardiac Catheterization lab. The angioplasty will be done here. This is also called the “cath lab”.

The cath lab is usually cool. Ask for an extra blanket if you are cold. The lights in the cath lab will be dim during the procedure. This is so the doctor can see the x-ray images more clearly.

## **What can I expect during the procedure?**

Your angioplasty will take about 1 hour to complete. If your condition is more complex, your procedure will be longer. You will be awake but your nurse will give you medicine to help you relax.

For the angiogram, you will lie on an x-ray table. You will be covered with a sterile sheet. You will be able to breathe and talk.

An x-ray camera will move across your chest. You will be on a heart monitor. During the procedure, your cardiologist and nurses will explain what is happening. They will also ask how you are feeling.

1. You will get comfortable on the x-ray table.
2. The area where the catheter will be inserted (your leg or wrist) will be washed. This will help prevent infection.
3. Your doctor will freeze the area the catheter will go in using a small needle. It may sting a little. Once the medicine starts to work, you may still feel some pressure in that area. Tell the doctor if you feel pain.
4. When the area is frozen, your doctor will make a tiny incision (cut). This allows a short tube (introducer sheath) to be inserted. This tube will protect your artery during your angioplasty.
5. Then, your doctor will insert a long flexible tube (guiding catheter) into the introducer sheath. It will move through the main artery in your chest (aorta). Your doctor will guide it to where the coronary arteries branch off to the heart.
6. Then, your doctor will inject a small amount of x-ray dye through the guiding catheter. This dye will go into the coronary arteries. You may feel a warm flushing sensation when the dye is injected. This is normal and passes quickly.
7. Your doctor will watch the movement of the x-ray dye on a screen. The dye lets your doctor see the places where your arteries are narrowed. You may be able to see the screen as well.

Your doctor may ask you to take a deep breath and hold it for a few seconds. Your doctor may also ask you to cough after the x-ray is finished. This helps remove the dye from the arteries.

8. Your doctor will look for the narrowing on the x-ray screen. When one is found, a balloon catheter is passed through the guiding catheter.
9. A guide wire inside the balloon catheter is then moved through the artery. The guide wire will stop when the tip is past the narrowing.
10. The balloon catheter is then moved over the guide wire. It will stop in the narrowed part of the artery.

11. When the balloon is in place, your doctor will slowly inflate it. It may be inflated several times to push the plaque against the artery walls and open the artery enough.

The balloon is inflated for about 30 seconds each time. When the balloon is inflated, the blood stops flowing through your artery for a short time. This time is not long enough to damage your heart. However, you may have some chest pain. Tell your doctor and nurses if you have chest pain or any discomfort. Pain usually goes away quickly when the balloon is deflated.

12. The balloon catheter is deflated and removed once your doctor is satisfied with the result.

### **What should I expect after the procedure?**

After your surgery, you will go through 4 steps before you are ready to go home.

The stages are:

1. Wrapping up in the procedure room
2. Resting in the recovery room
3. Resting in your hospital room
4. Preparing to go back home the morning after

## **1. Wrapping up in the procedure room**

When the angioplasty is finished, your doctor will talk to you about the procedure. Your doctor will tell you the results. They may even show you your artery on the x-ray screen.

If your procedure was done through your wrist, the introducer sheath will be removed. It will be removed in the cath lab at the end of the procedure. Your doctor or nurse will put a clamp on your wrist. The clamp will stay for about 2 hours to prevent bleeding.

If your procedure was done through your groin, the introducer sheath may be left in place for 4 hours. This will allow time for the blood thinners (medicines that thin your blood, such as heparin) to wear off.

## **2. Resting in the recovery area**

After the angioplasty, you will be taken to the recovery area. You will stay here for 30 to 60 minutes.

Sometimes people experience chest pain or discomfort right after angioplasty. This is usually because you are having spasms in your artery. You may have some pain because your artery wall was stretched during the procedure. This usually goes away quickly. You may be given medicine to make you more comfortable until the pain goes away.

Your doctor and nurse will watch you closely. Tell them if you have any discomfort.

In the recovery area the nurses will check your:

- heart using a small heart monitor
- blood pressure
- groin or wrist depending on which area the doctor used to do the procedure
- blood circulation in your foot or hand

**If the procedure was done through your groin:**

You will be asked to lie flat in bed and keep your leg straight. You must not move this leg. This stops bleeding from the puncture site (small cut). Tell the nurses if you are uncomfortable. They will help you to get more comfortable.

**If the procedure was done through your wrist:**

You will wear a clamp and arm brace for about 90 to 120 minutes after the procedure. This holds your wrist in a position to stop bleeding from the puncture site. Do not lift or turn anything with this hand for a few days.

**3. Resting in your hospital room**

When you are ready, you will be taken back to your hospital room. There, your nurse will check:

- blood pressure and pulse
- the puncture site
- blood circulation to your foot or hand

You may have visitors once you are settled in your room.

**If the procedure was done through your groin:**

Your doctor will sometimes leave the introducer sheath in your leg for 4 hours after your procedure. If this happens:

- You will need to lie on your back with your leg straight for 4 hours.
- Your nurse will then remove this sheath. Using a clamp, your nurse will apply pressure to your groin for about 30 minutes. This will help to prevent bleeding.
- When the clamp is taken off, your nurse will put a pressure dressing, transparent dressing or a band aid on your puncture site.
- You will stay in bed with your leg straight for another 4 hours.
- When you are ready, your nurse will help you get out of bed and walk.
- You will be able to eat and drink once the introducer sheath is removed.

### **If the procedure was done through your wrist:**

- You will be able to walk after a few hours of rest.
- Your nurse will let you know when you can eat and drink. This is usually a few hours after the procedure.

### **4. Preparing to go home the morning after**

You will have to do these things before you can go home:

- You will have blood tests and an electrocardiogram. These tests will make sure that your heart muscle was not damaged during the procedure.
- Your nurse will remove the dressing from your wrist or groin. Your nurse will apply a small bandage in its place.
- Your nurse will talk to you about doing your activities again. Your nurse will also talk to you about your medicines.
- You will be given any follow-up appointments with your doctors.
- You will be able to go home when the results of your blood tests are OK or within the normal range.

### **What do I need to do after surgery?**

If your cardiologist put a stent in your artery you may need to take clopidogrel (Plavix®) or prasugrel for a while. You will take the medicine for the prescribed time. You may have to take it for up to 1 year.

During that time, the lining on the inside of your artery will grow over the stent. Your doctor will tell you when to stop taking the clopidogrel (Plavix®) or prasugrel. Take your medicine exactly as your doctor teaches you to.

You will continue to take aspirin before and after your angioplasty.

## What can I expect after I return home from angioplasty?

### Activities

Do not do physically challenging activities during your first week at home. One example is heavy lifting. This will help your puncture site heal completely. Walk at a slow pace unless your doctor says you can walk faster.

Most people have no problems after a successful angioplasty. They can do their usual activities within a few weeks.

How quickly you return to your usual activities may depend on a few things. It may depend on whether you have had a recent heart attack. It may also depend on what type of activities you do. Your doctor will talk to you about this.

### Feelings and coping

It is normal to feel anxious (worried) about your health after having problems with your heart. At home you may start to think more about why you got coronary artery disease. You might start to think about how you can change your lifestyle to prevent more problems. This may feel overwhelming or depressing.

You may feel depressed after being diagnosed or treated for heart disease.

**As you become more active, these feelings usually go away.** Tell your family doctor if you feel depressed for longer than 2 weeks. He or she can help you feel better.

### Lifestyle changes

You can be an important part of your own treatment. You can make changes to prevent your heart disease from getting worse.

The risk factors that you can change are:

- high cholesterol
- diabetes
- high blood pressure
- sedentary lifestyle (not getting enough exercise)
- obesity
- stress
- smoking

To make these important changes, you need the help and support of your friends, family and doctor. Your heart disease can affect the people closest to you.

Talk to your family and friends and get support. This will help you and your family cope with any changes in your lives.

Support groups and programs are available to help you and your family. They can help you all adjust to living with heart disease. Your health care team can help you find the resources that fit your needs.



**Remember:** Life can be fulfilling again. Modern treatments for heart disease work well. Patients live for many years after being diagnosed with heart disease.



For many people, finding out they have heart disease is a chance to make changes. These changes can lead to a healthier and happier life. You may feel better than you have in years!



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